DANGER

**THIS TOOL FOR USE BY LICENSED OPERATORS ONLY.
READ AND OBEY ALL SAFETY AND OPERATING
INSTRUCTIONS BEFORE OPERATING TOOL.**

Ramset®
FASTENING SYSTEMS

RAMSET RT400 (M) TOOL

OPERATOR'S
SAFETY & OPERATING
INSTRUCTION MANUAL

**SEMI-AUTOMATIC, LOW VELOCITY
PISTON TYPE FASTENING TOOL**

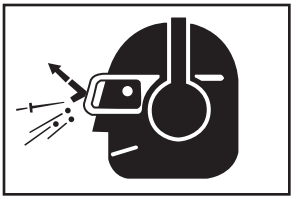
ITW Ramset/Red Head®

DANGER

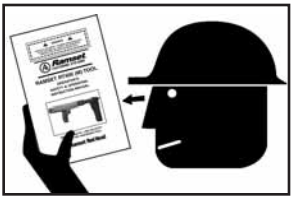
THIS TOOL IS TO BE USED ONLY BY PROPERLY TRAINED AND LICENSED OPERATORS.

YOU MUST SUCCESSFULLY COMPLETE THE ITW RAMSET/RED HEAD'S TRAINING PROGRAM FOR THE TOOL AND OBTAIN A CERTIFIED OPERATOR'S LICENSE BEFORE HANDLING, LOADING OR OPERATING THIS TOOL.

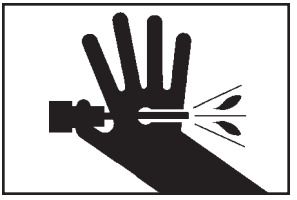
ATTEMPTING TO HANDLE OR OPERATE THIS TOOL WITHOUT PROPER TRAINING AND LICENSING CAN RESULT IN SERIOUS INJURY TO THE OPERATOR OR BYSTANDERS.



Operator's and bystanders must wear eye and hearing protection.



Read manual before operating tool.



Never close tool with hand over fastener loading end of the tool. A serious hand injury from penetration by the piston or a discharged fastener could result.

DANGER

Just as no one can merely read a book about driving an automobile and then hope to drive one safely, no one should attempt to use any Ramset tool without adequate, competent personal instruction. And just as one must be licensed to drive an automobile, one must also be licensed to use a powder actuated tool. No automobile instruction book or instructor can forewarn a learner against all possibilities and emergencies, nor can ITW Ramset/Red Head instructors and printed material detail all possible conditions surrounding the use of ITW Ramset/Red Head tools and products.

Responsibility for the safe and proper use of this tool rests with the tool user and the employer.

Preparation

Acceptable Base Materials

Powder actuated fastening is suitable for use in the following base materials only:

- **Poured Concrete**
- **Structural Steel**
- **Masonry Joints (see page 8)**

Never attempt to fasten into any other type of material. *Fastening into other materials can cause blindness or other serious injury.*

Unacceptable Base Materials

Never attempt to fasten into very hard or brittle materials such as cast iron, tile, glass, or rock of any type. *These materials can shatter, causing the fastener and/or base material fragments to fly free and cause serious injury to the tool operator and others.*

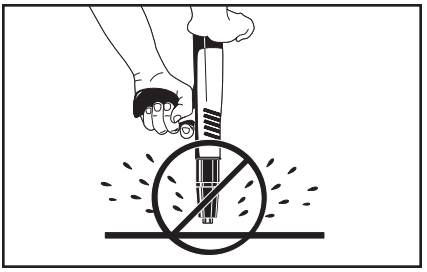
Never fasten into soft base materials, such as drywall or lumber products. *These materials may allow the fastener to travel completely through and out the other side, endangering those in the path of the fastener.*

Never fasten into any base material that does not pass the Center Punch test. *Failure to assure the suitability of the base material can result in serious injury to the eyes or other body parts.*

Center Punch Test

ALWAYS WEAR SAFETY GOGGLES WHEN PERFORMING THIS TEST.

1. **Always check the material being fastened into for hardness before attempting any fastening operation.**
2. **Using a fastener as a center punch, strike the fastener against the work surface using an average hammer blow and check the results.**



NEVER FASTEN INTO VERY HARD OR BRITTLE MATERIALS

NEVER FASTEN INTO SOFT MATERIALS SUCH AS DRYWALL

Center Punch Test Results

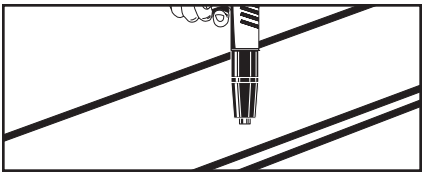
1. **If the fastener point is flattened, the material is too hard for a powder actuated fastening.**
2. **If the fastener penetrates the material easily, the material is too soft.**
3. **If the material cracks or shatters, the material is too brittle.**
4. **If the fastener makes a small indentation into the material, the material is suitable for fastening.**

Loads & Load Selection Safety

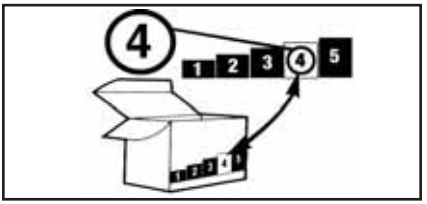
1. **Always make a test fastening after being sure that the base material is suitable for powder actuated fastening.** *Failure to determine the correct power level to be used may result in the use of excessive power, allowing the fastener to pass completely through the work material, causing serious or fatal injuries to others who may be in the path of the fastener.*
2. **Color-blind operators must always select strip loads by number to prevent use of an incorrect load for the same reasons as in #1 above.**

Workplace Safety

1. **Operators and bystanders must always wear approved safety goggles and approved hearing protection.** *Failure to do so may result in blindness or serious eye injury from flying debris and loss of hearing from constant or repeated unprotected exposure to fastening noise.*
2. **Always keep the work area clear of bystanders and unnecessary materials that could interfere with safe tool operation.** *Operating the tool in a congested or cluttered area may affect your ability to operate the tool safely.*
3. **Never operate tool if flammable or explosive materials are nearby.** *Powder loads burn and create sparks when fired and could ignite these materials or fumes.*
4. **Always post warning signs within 50 ft. of the area where fastening is to be done. Sign must state: "Caution - Powder Actuated Tool In Use".** *Failure to warn others may result in serious injury to them. Contact ITW Ramset/Red Head at 1-800-348-3231 to obtain this sign.*



ALWAYS MAKE A TEST FASTENING



COLOR-BLIND OPERATORS MUST ALWAYS SELECT LOADS BY NUMBER

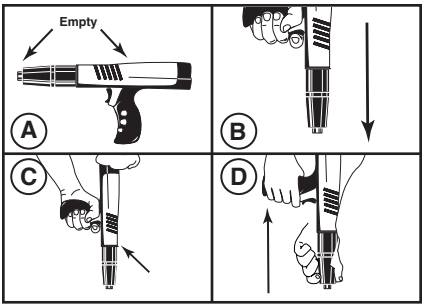
KEEP WORK AREA CLEAR OF BYSTANDERS AND CLUTTER

NEVER OPERATE THE TOOL AROUND FLAMMABLE OR EXPLOSIVE MATERIALS

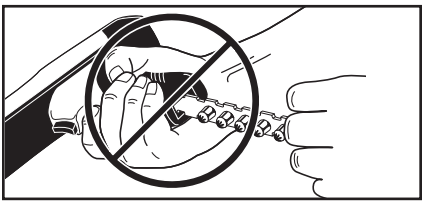
ALWAYS POST WARNING SIGNS

Tool Handling Safety

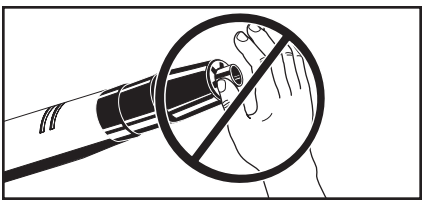
1. **Always be sure tool is operating properly before attempting to use it. Follow the "Daily Function Check" shown to the right and described on page 9.**
2. **Always load tool using a strip load selected directly from a box indicating the power load type and number. Never attempt to use loose strip loads that could be mis-identified.**
3. **Never carry loose strip loads in pockets with pins or other hard objects.**
4. **Never load a tool unless you intend to immediately make a fastening.** *Loading a tool and leaving it unattended in the work area can result in the tool being accidentally discharged by others.*
5. **Never place your hand or any other body part over the fastener loading end of the tool.** *Serious hand injury could result from being struck by either a fastener or the tool piston should the tool be accidentally fired.*
6. **Always store the tool unloaded and keep the tool and the loads securely locked in a tool box. Keep keys away from children and unlicensed persons.**
7. **Always keep the tool pointed away from yourself and others.**
8. **Never carry a loaded tool around the work area.**
9. **Never allow anyone not trained to use the tool.**
10. **Never engage in horseplay with the tool.**
11. **Using the tool in poorly ventilated areas, cleaning tool or handling loads may result in exposure to lead or other substances known to cause birth defects, and other physical harm. Have adequate ventilation at all times and wash thoroughly after exposure.**



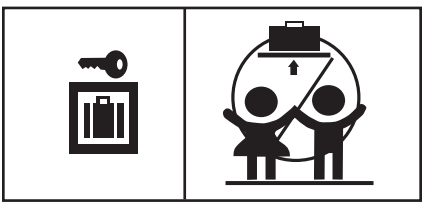
ALWAYS DO A DAILY FUNCTION CHECK BEFORE LOADING TOOL



NEVER LOAD THE TOOL UNLESS IT IS TO BE USED IMMEDIATELY



NEVER PLACE HANDS OR BODY OVER MUZZLE OPENING



KEEP TOOL LOCKED & OUT OF THE REACH OF CHILDREN

FAILURE TO FOLLOW INSTRUCTIONS CAN CAUSE INJURY TO THE TOOL OPERATOR OR TO BYSTANDERS.

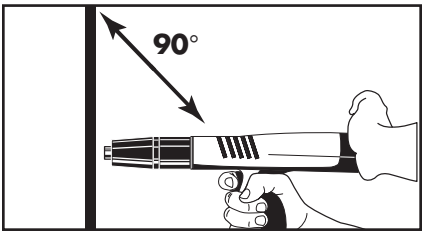
Fastener Driving Safety

1. **Only use the tool for fastening into a suitable base material.**
2. **Never fire the tool without a fastener.** *Firing a tool without a fastener will cause the piston to strike the work surface, and may cause serious injury to you and others in the work area.*
3. **Always hold the tool perpendicular to and firmly against the work surface when making a fastening.** *Failure to do so could allow a fastener to ricochet.*
4. **Never attempt to drive a fastener close to an edge or to another fastener.** *See page 8 for guidelines.*

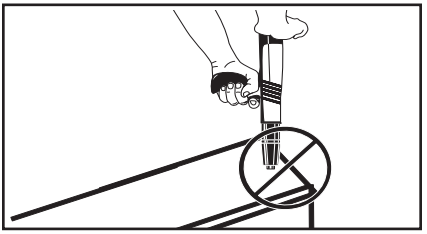
ALWAYS FOLLOW THE MISFIRE PROCEDURE.

If the tool does not fire after pulling the trigger, continue to hold the depressed tool against the work surface for at least 30 seconds. *Then carefully open the tool, remove the load strip, and put it in a can of water or other non-flammable liquid. Never carelessly discard a strip with live loads into a trash container.*

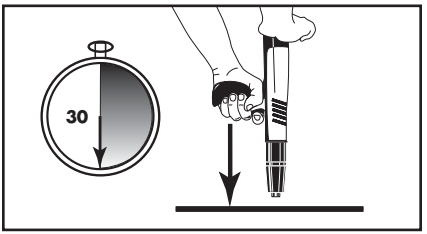
If the tool becomes stuck or jammed with a live powder load, *keep the tool pointed in a safe direction, and immediately tag it,* **"Danger- defective - do not use".** *Lock the tool in a tool box and call your local Ramset distributor for assistance.*



ALWAYS HOLD THE TOOL PERPENDICULAR TO THE WORK SURFACE



NEVER DRIVE A FASTENER CLOSE TO AN EDGE



HOLD THE TOOL FIRMLY AGAINST THE WORK SURFACE FOR AT LEAST 30 SECONDS

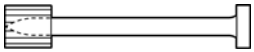
Your Ramset RT400 Tool uses only the Ramset fasteners and loads shown below or listed for the tool in the Product Catalog.

DANGER

Never use any other types of fasteners or strip loads in the Ramset RT400 Tool. Use of other types of fasteners or loads may cause unintentional load discharge, damage the tool, cause poor fastening performance, or create a risk of serious injury to the operator or bystanders.

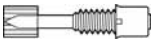
FASTENERS

.300 HEAD PLASTIC FLUTED DRIVE PINS



.145 Shank Diameter in Shank Lengths from 1/2" to 1-1/2"

1/4" - 20 THREADED STUDS



.145 Shank Diameter in Shank Lengths of 1/2" and 1" and Thread Lengths of 1/2", 3/4" and 1"

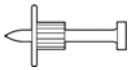
8 mm HEAD TOP-HAT DRIVE PINS

.145 Shank Diameter in Shank Lengths from 1/2" to 1"

CONDUIT CLIP ASSEMBLIES

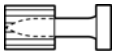
For 1/2" and 3/4" Diameter Conduit with 7/8" Premounted Fastener

.300 HEAD PLASTIC FLUTED DRIVE PINS WITH 7/8" WASHER



.145 Shank Diameter in Shank Lengths from 1" to 2"

.300 HEAD POWER POINT PLASTIC FLUTED DRIVE PINS



.150 Straight Shank in Shank Lengths from 1/2" to 7/8"
.150/.180 Step Shank in Lengths from 1" to 1-1/4"

CEILING CLIP ASSEMBLIES

Ceiling Clip with 1" or 1-1/4" premounted .145 Shank Pin and Ceiling Clip with 1" or 1-1/4" Premounted .150/.180 Shank Pin

LOADS

Ramset RS27 strip loads are specially made for use in the Ramset RT400 Tool.

RS27 10 SHOT STRIP LOAD

POWER LEVEL	CATALOG NUMBER	LOAD COLOR	CASE COLOR
2	2RS27	Brown	Brass
3	3RS27	Green	Brass
4	4RS27	Yellow	Brass
5	5RS27	Red	Brass

The power level of the load is indicated by the number marked on each box, the color of the box, and the color on the tip of each load. As the number increases, the power level also increases.

Always perform the center punch test described on page 3 to test the base material.

Always make a test fastening using the lowest power level first. If more power is required to set the fastener, use the next higher power level until the powder level necessary to drive the fastener is reached.

FASTENING APPLICATIONS

Your Ramset tool can be used for a wide range of fastening needs in a variety of base materials.Reading and follow these important fastening guidelines will help you get the best results from your tool, fasteners, and powder loads, as well as help you perform these fastening operations safely and effectively.

Powder actuated fastenings are permanent fastening so attempting to remove a fastener from concrete or steel may result in serious injury.

Fastening to Concrete

When fastening into concrete, always maintain a minimum spacing of 3" between fastenings and 3" from any free edge. Concrete thickness should be at least three times the intended penetration depth into the concrete. The primary exception to the 3" edge distance can occur in a sill plate application where, by necessity, the edge distance is reduced.

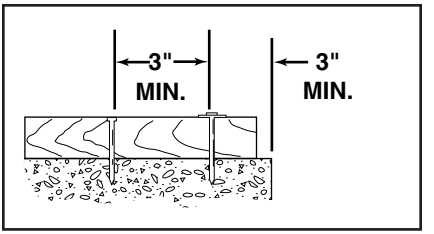
Driving fasteners too close to an edge or too close to each other can cause the concrete edge to fail or fasteners to fly free.

Fastening to Concrete Block or to Masonry Walls

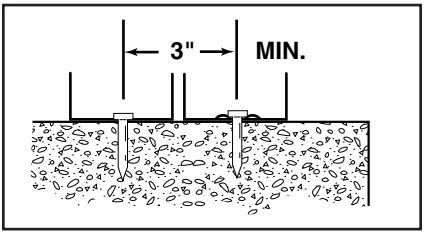
While this application is not recommended, when used, it is necessary to take care to observe a 3" edge distance to avoid cracking the block and over penetration of the fastener to avoid loss of holding value. Fastening may be made into the horizontal joint but not into the vertical joint.

Fastening to Steel

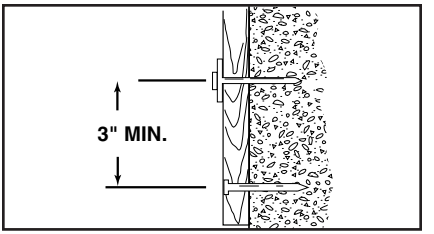
Your Ramset tool can be used for fastening on the flat surfaces of structural steel. When fastening into steel, always maintain a minimum spacing of 1-1/2" between fastenings and 1/2" from any edge.



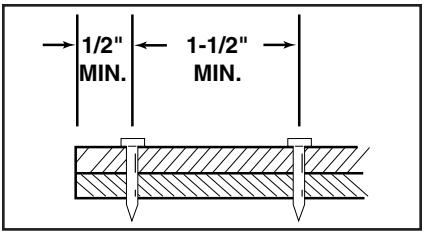
SPACING WOOD TO CONCRETE



PENETRATION — THIN GAUGE METAL TO CONCRETE



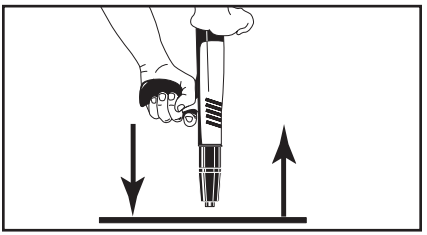
SPACING — FURRING STRIP TO CONCRETE



SPACING — STEEL TO STEEL

TOOL OPERATION

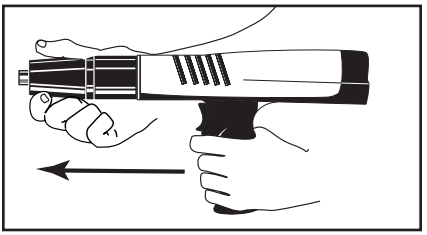
Daily Function Test
Always check the tool first to make sure that it does not contain a strip load or fastener. Test the tool several times by depressing the muzzle bushing fully on a hard surface and pulling the trigger. You should hear an audible click as the firing pin releases. Let up on the tool and check to be sure that the barrel has opened to the full open position.



PERFORM FUNCTION TEST WITH EMPTY, UNLOADED TOOL

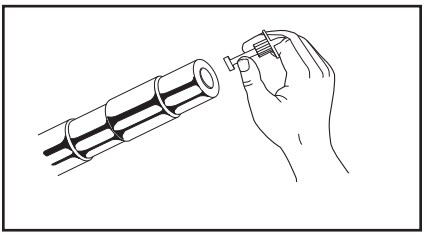
OPERATING THE RAMSET RT400 TOOL

1. After checking to be sure that the tool is not loaded, point it in a safe direction and be sure that the barrel is fully extended. This assures that the piston is in position for the next fastening.



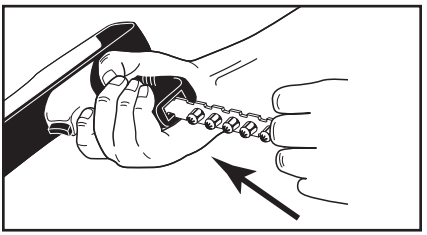
BE SURE BARREL IS FULLY FORWARD

2. With finger off the trigger, place the fastener, point out, into the muzzle end of the tool until the point end is inside the muzzle. **NEVER** load a fastener with your finger on the trigger. **DO NOT** use excessive force when inserting a fastener. **STOP** immediately if excessive force is require, inspect the barrel to find out why the fastener is not entering the muzzle freely. **DO NOT** continue loading unless the problem is corrected.



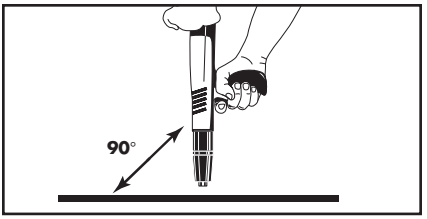
INSERT FASTENER INTO THE MUZZLE END OF THE TOOL WITH THE POINT OUT

3. With the tool pointed in a safe direction and finger away from the trigger, insert a load strip into the bottom of the handle and push it in until bottom of the strip is equal to the bottom of handle.

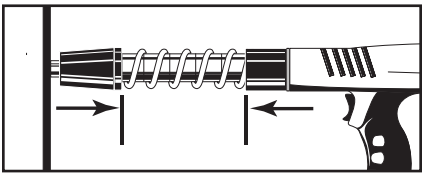


INSERT LOAD STRIP INTO THE SLOTS IN THE RECEIVER HOUSING

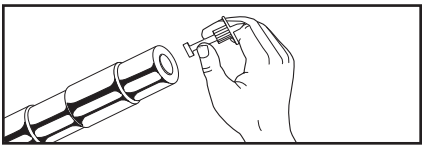
4. Hold the tool perpendicular (90°) to the work surface with both hands and press firmly to fully depress the tool. Maintain firm downward pressure on the tool with both hands and pull the trigger to drive the fastener. **DO NOT DEPRESS THE TOOL AGAINST ANYTHING OTHER THAN THE INTENDED WORK SURFACE.** Holding the tool firmly in place will produce more consistent fastening quality and minimize tool wear or damage.
5. After making the fastening, let up on the tool pressure and note that the barrel assembly returns to the full open position. This automatically resets the piston for the next fastening. Always keep fingers and other body parts away from the muzzle end of the tool.
6. Insert another fastener in the muzzle end of the tool as before and the tool is ready for the next fastening. Keep your finger off of the trigger until the tool is in position to drive the fastener.
7. To remove a used or partially used strip load from the tool, pull the strip out from the top of the tool. **NEVER** try to remove a jammed or stuck load strip. Should a "jammed" load strip occur, call your local Authorized Ramset Distributor for technical assistance.



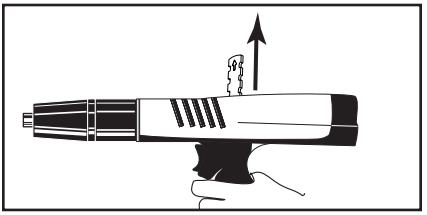
HOLD THE TOOL FIRMLY AND PERPENDICULAR TO THE WORK SURFACE



LET UP ON TOOL PRESSURE. NOTE THE BARREL HAS RETURNED TO THE OPEN POSITION



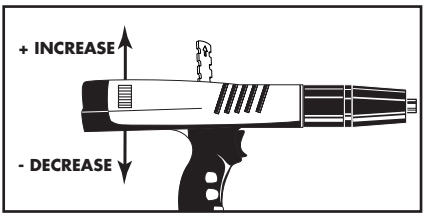
INSERT THE NEXT FASTENER



REMOVE THE LOAD STRIP

POWER LEVEL ADJUSTMENT

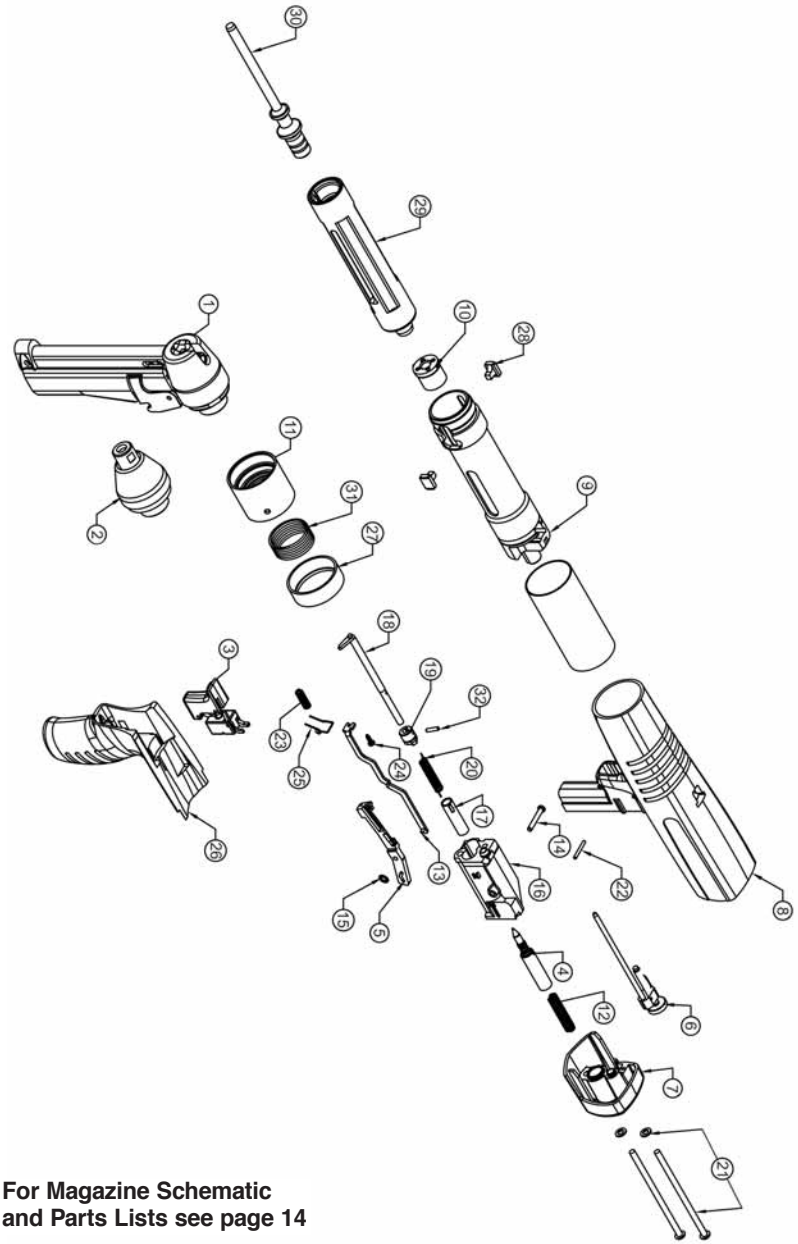
The power of the tool may be adjusted for varying materials by turning the power adjust wheel.



POWER LEVEL ADJUSTMENT

REFER TO PARTS SCHEMATIC FOR PROPER ASSEMBLY OF PARTS

– Overdriving of fasteners	– Excessive power	– Change to the next lower power level load strip color and number. Reduce power by turning the power adjustment wheel.
	– Soft base material	– Check base material (see page 3)
– Tool fails to fire	– Failure to depress completely	– See “Tool does not completely depress”
	– Excessive dirt buildup on breech face not allowing proper penetration of firing pin	– After following misfire procedure, check firing pin indentation on load. Clean breech face
	– Firing pin and/or breech damaged	– Replace damaged parts
– Tool does not completely depress	– Misassembled or damaged parts	– Check all parts in the receiver for damage or improper assembly.
– Reduction or loss of power	– Piston not being returned to the full rear position	– Check to be sure that the return spring has pulled the barrel completely open to properly position the piston.
	– Worn or damaged retention balls or clip on the buffer assembly	– Replace missing worn or damaged parts
	– Worn or broken pawls	– Replace pawls
– Tool cannot be cocked or opened	– Excessive dirt buildup	– Clean tool thoroughly
	– Damaged or bent piston	– Replace piston
	– Broken or damaged parts	– Tag tool with warning “Defective–Do Not Use” Place in a locked container and contact your local ITW Ramset/Red Head representative for service.
– Failure to index strip	– Strip not inserted in tool correctly or is damaged	– Check load strip. Properly dispose of damaged strip. (See page 6)
	– Damaged indexing mechanism	– Contact your ITW Ramset/ Red Head Distributor for assistance



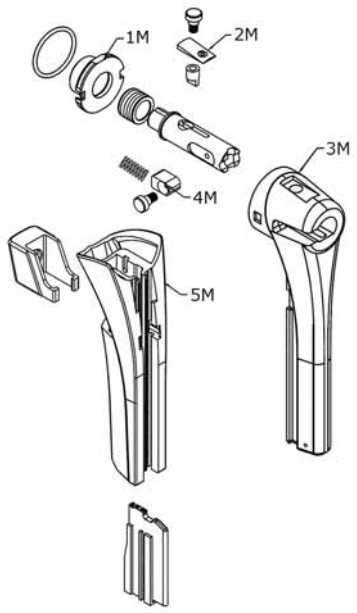
For Magazine Schematic and Parts Lists see page 14

RAMSET RT400 TOOL PARTS LIST

KEY	PART NO.	DESCRIPTION	QTY
1	A1000-4	MAGAZINE ASSEMBLY	1
2	A1001-7	MUZZLE BUSHING ASSEMBLY	1
3	A1000-11	TRIGGER ASSEMBLY	1
4	A1001-1	FIRING PIN ASSEMBLY	1
5	A1001-2	ADVANCE LEVER ASSEMBLY	1
6	A1001-3	POWER ADJUSTMENT ASSEMBLY	1
7	A1001-4	END CAP ASSEMBLY	1
8	A1001-5	HOUSING ASSEMBLY	1
9	A1000-6	RECEIVER ASSEMBLY	1
10	A1099	BUFFER ASSEMBLY, (pkg of 3)	1
11	A1001-8	RETENTION COLLAR ASSEMBLY	1
12	A1067	FIRING PIN SPRING	1
13	A1063	ADVANCE LINK ASSEMBLY	1
14	A1068	ADVANCE LEVER ASSEMBLY PIN	1
15	A1045	ADVANCE LEVER ASSEMBLY RETENTION NUT	1
16	A1094	MECHANISM HOUSING	1
17	A1095	MECHANISM HOUSING PLUG	1
18	A1089	COCKING ROD	1
19	A1088	ROTARY SEAR	1
20	A1069	COCKING ROD SPRING	1
21	A1100	END CAP SCREW/WASHER PACKAGE	2
22	A1060	TRIGGER MECHANISM PIN	1
23	A1074	TRIGGER SPRING	1
24	A1061	PLASTITE SCREW, TRIGGER	1
25	A1075	TRIGGER SEAR SPRING	1
26	A1046	HANDLE	1
27	A1005	PAWL HOUSING	1
28	316540	PAWL, (pkg of 2)	2
29	A1006	BARREL	1
30	A1010	PISTON	1
31	A1009	RETURN SPRING	1
32	A1071	ROLL PIN	1

RT400 TOOL MAGAZINE SCHEMATIC AND PARTS LIST

KEY	PART NO.	DESCRIPTION
1M	A1011A	MUZZLE ASSEMBLY
2M	A1077A	LOCKOUT ASSEMBLY
3M	A1013	MAGAZINE HOUSING
4M	A1021A	SPRING BLOCK ASSEMBLY
5M	A1014A	MAGAZINE SLIDER/ FOLLOWER ASSEMBLY



MAINTENANCE

IMPROPERLY MAINTAINED TOOLS CAN CAUSE SERIOUS INJURIES TO TOOL OPERATOR AND BYSTANDERS
CLEAN TOOL DAILY

Always make sure the tool is not loaded before performing any service or repair and always wear safety goggles when cleaning or servicing the tool.

NORMAL CLEANING

All front end parts shown in the disassembly section are to be cleaned daily with a good detergent oil and wire brush. Remove all dirt and carbon buildup and wipe parts dry with a clean rag. Check all parts for wear or damage before reassembly and replace or repair any worn or damaged parts.

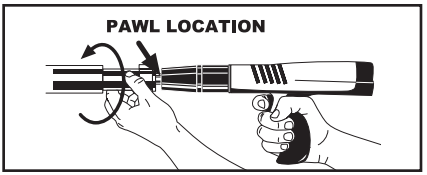
COMPLETE CLEANING / GENERAL MAINTENANCE

Heavy or constant exposure to dirt and debris may require that the tool be cleaned more extensively. Complete disassembly and cleaning of all parts may be necessary to restore the tool to normal operation. General maintenance should be performed every six months or more often if the tool is subjected to heavy use. Contact your authorized Ramset Distributor for assistance.

ALWAYS FUNCTION TEST THE TOOL AFTER PERFORMING ANY SERVICE. SEE PAGE 9 FOR DETAILS ON THE FUNCTION TEST.

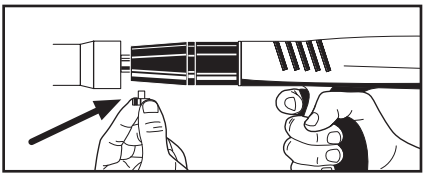
TOOL DISASSEMBLY

1. Unscrew the barrel retention sleeve and slide it away from the tool housing. Handle the tool carefully after the sleeve is unscrewed to prevent the two barrel pawls from falling out.



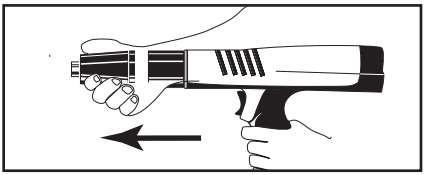
UNSCREW THE BARREL RETAINING SLEEVE

2. Remove the two pawls from the slots in the sides of the tool housing while holding the retention sleeve forward toward the muzzle end of the tool.



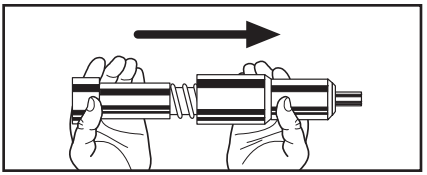
REMOVE BOTH PAWLS

3. Slide the barrel assembly out of the tool body. Note the position of the slots on the side of the barrel and the rod at the lower rear of the barrel. Also note the position of the power adjust hole.



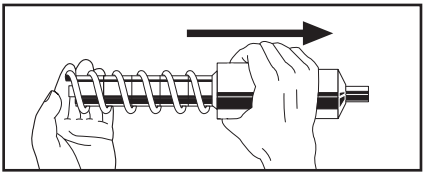
SLIDE BARREL ASSEMBLY OUT OF THE TOOL BODY

4. Remove the retaining sleeve.



REMOVE THE RETAINING SLEEVE

5. Remove the return spring.



REMOVE THE RETURN SPRING

6. Unscrew the muzzle bushing assembly which includes the plastic outer sleeve. Note: If this is difficult to do by hand, grasp the barrel under the plastic sleeve and use a wrench on the flats on the muzzle bushing to loosen the entire muzzle bushing assembly.

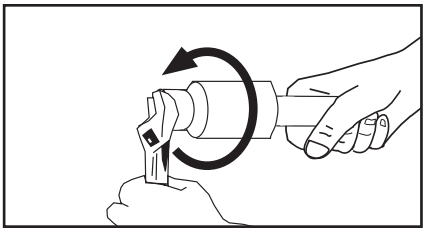
7. Remove the piston and the buffer assembly from the barrel.

8. Inspect all parts for wear or damage and clean or replace as required. Use detergent oil and cleaning brush. Wipe parts dry before reassembly. **WEAR SAFETY GOGGLES WHEN CLEANING TOOL PARTS.**

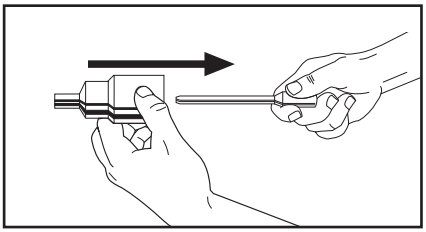
9. Check the piston tip for mushrooming or other deformities, and grind flat. The tip of the piston must be 90° to the shank and grinding must only be done by qualified personnel. The overall minimum length of the piston must not be less than 6-1/8". When less than this length, the piston must be replaced to avoid tool damage.

10. Reassemble the tool in the reverse order of disassembly.

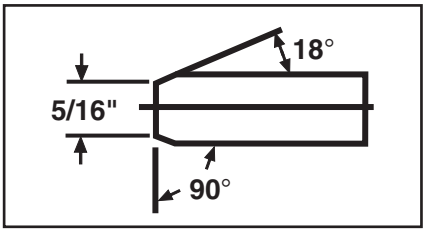
ALWAYS PERFORM THE DAILY FUNCTION TEST BEFORE USING THE TOOL AFTER CLEANING OR SERVICING.



HOLD BARREL AND USE A WRENCH TO LOOSEN THE MUZZLE BUSHING ASSEMBLY



PULL PISTON OUT OF THE MUZZLE BUSHING



GRIND PISTON TIP FLAT AND BEVEL THE TIP EDGE AT 18°

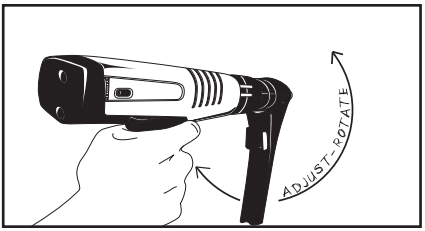
The Ramset RT400 magazine features a unique slip-clutch mechanism allowing the user to position the magazine at any angle.

To Adjust The Magazine Angle:

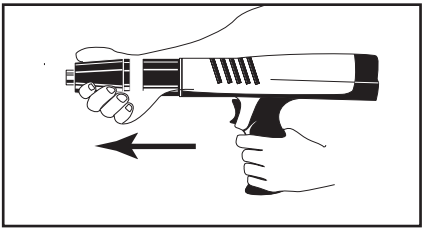
Rotate the magazine to the desired position.

To Remove/Install the Magazine:

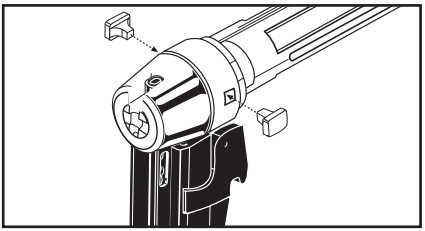
1. Be sure the tool is unloaded and remove any remaining fasteners from the magazine.
2. Unscrew the barrel retention sleeve, remove the pawls, slide out the barrel assembly and remove the spring. These steps are further detailed on page 15.
3. Rotate the barrel and magazine so the square holes in the side of the magazine line up with the slots in the magazine collar.
4. Place the pawls into the square holes in the magazine. With the fastening end of the barrel pointed away from you, turn the barrel counter-clockwise to remove it from the magazine assembly.
5. The magazine can be installed by following the reverse of the steps shown above.



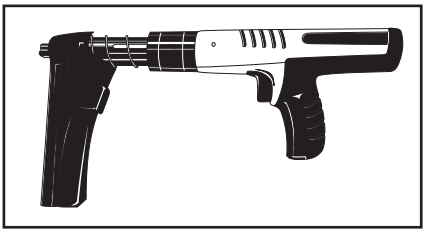
**TO ADJUST POSITION —
ROTATE IN EITHER DIRECTION**



**SLIDE BARREL ASSEMBLY
OUT OF THE TOOL BODY**



**GRASP ASSEMBLY AROUND PAWLS
TO SCREW ON MAGAZINE**



RT400 WITH MAGAZINE ATTACHED

WARRANTY

ALL WARRANTIES OF THE PRODUCTS DESCRIBED HEREIN, EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSES, ARE SPECIFICALLY EXCLUDED, EXCEPT FOR THE FOLLOWING: Ramset will repair or replace, at its sole option, any tool, part, or fastener which, within 5 years after sale by Ramset is found by Ramset to be defective in material or workmanship, normal wear and tear excluded. **THIS IS THE SOLE WARRANTY OF RAMSET AND THE SOLE REMEDY AVAILABLE TO THE BUYER AND IN NO EVENT WILL ANY DIRECT OR INDIRECT INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR ANY OTHER DAMAGES, BE AVAILABLE.**

Copyright 2005 ITW Ramset/Red Head

POWDER ACTUATED TOOL MANUFACTURES' INSTITUTE INC.

THE MODEL RT400 TOOL COMPLIES WITH OSHA REQUIREMENTS AND WITH ANSI A10.3 SPECIFICATIONS

FOR TOOL REPAIR SERVICE CONTACT YOUR LOCAL AUTHORIZED ITW RAMSET/RED HEAD DISTRIBUTOR OR CONTACT YOUR NEAREST RAMSET TOOL REPAIR CENTER

WEST
Los Angeles, CA
5950 Boxford
Commerce, CA 90040
Phone: 800-368-9724 (CA only)
Phone: 800-227-1823
Fax: 800-253-6444

MIDWEST
Paris, KY
7000 Bypass Road
Paris, KY 40361
Phone: 800-816-6645
Fax: 800-816-6673

EAST
Allentown, PA
739 Roble Road
Allentown,PA 18109
Phone: 800-266-9723
Fax: 610-266-0962

ITW Ramset/Red Head®

Concrete Fastening Systems
Wood Dale, IL 60191
630-350-0370
www.ramset-redhead.com

Buy with Confidence...
Buy From Your Authorized Distributor

© ILLINOIS TOOL WORKS 2005

PRINTED IN THE U.S.A. REVISED 01/05 Form No. SMRT400A-01/05